

base when said ball is positioned inside said cavity, said bracket having an inner edge positioned around a portion of said ball;

Alone
a threaded stud secured to said first section of said ball and extending through said opening in said second section outwardly from said socket, said stud being movable within said opening inwardly to an extended position and outwardly to a retracted position, said stud moving said first section of said ball into abutment with said second section when said stud is in the retracted position to permit said ball to rotate freely in said socket, said stud moving said first section of said ball outwardly away from said second section into engagement with said socket when said stud is in the extended position to prevent rotation of said ball in said socket, said inner edge of said bracket engaging said ball when said stud is in the extended position to prevent rotation of said ball in said cavity.

Favorable reconsideration of the application is respectfully requested.

REMARKS

Claims 1-91 are pending in this application as filed. Claims 1 and 30 are canceled pursuant to this amendment. Claims 92-96 are added pursuant to this Amendment. The Examiner has indicated that Claims 90 and 91 are allowed. As set forth below, Applicant submits that claims 2-29 and 31-96 are directed to patentable subject matter, and are believed to be in condition for allowance. Reconsideration of the application, withdrawal of the Rejection, and issuance of a Notice of Allowability are respectfully requested.

With respect to the drawings, Examiner indicates in the Office Action that the drawings "have been objected to by the Drafting Review Branch." However, attached Form PTO-948 states that the drawings filed 7/17/98 are "not objected to by the Draftsperson under 37 CFR 1.84 or 1.152." Accordingly, Applicants believe the drawings are in an acceptable format, and that no

corrected drawings are necessary. If Applicants are incorrect in this understanding, please advice as to the specific objections so the drawings may be corrected.

Claims 1-89 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant has made changes to the claims to overcome the examples of indefinite language as noted by the Examiner. More specifically, the Examiner noted that throughout the originally filed claims confusion allegedly exists with respect to whether a combination of a backrest and a chair or a subcombination of a backrest system for a chair is claimed. Applicant has amended each of independent claims 2, 18, 22, 26, 42, 44, 46, 47, 49, 58, 62, 65, and 69 to clarify that a subcombination of a backrest system for a chair is claimed. For example, the Examiner notes that lines 9-10 of originally filed claim 1 appear to set forth a combination. To avoid any confusion, this limitation, which now appears in amended claim 2 at lines 13-14, requires that the attachment assembly is connectable to the posts. Similar corrections are made throughout the above-noted amended independent claims.

Other instances of vagueness noted by the Examiner include the phrase “within at least five degrees of freedom” as set forth in claim 25 as well as claims 27, 37 and 43. Each of these claims is amended to delete this phrase from the claim and avoid any confusion. Claim 40 is amended to avoid any vagueness by requiring that the support frame is horizontally movable forwardly and rearwardly with respect to the posts, and clarify the term “support frame”. Recitation of the term “or” is deleted in claim 47 so that amended claim 47 requires “at least one” back support pad. In claim 47, the word “the” is deleted to avoid any confusion regarding antecedent basis. Claim 62 is amended to avoid grammatical vagueness associated with the originally filed claim. In claim 74, the term “or” is deleted and replaced with “and” to avoid any uncertainty as to the metes and bounds of the claim. Claims 78-82 are amended to properly reference a ball and socket joint. Claim 83 is amended to set forth the second section, not “portion”.

In view of these amendments to the claims, Applicant believes the requirements of 35 U.S.C. § 112, second paragraph, are satisfied for all pending claims, and respectfully requests withdrawal of this ground of rejection for claims 2-29 and 31-89.

Moreover, Examiner found claims 76, 78-82 and 84-89 to be allowable over the prior art if rewritten to overcome §112, second paragraph, rejections and to include the limitations of the base claim and any intervening claims. Claims 76, 78 and 84, as amended, are in independent form, and include limitations of the base claims and any intervening claims. Claim 74 and claim 78 also are amended to remove the limitation of means for moving the first section of the ball. Thus, Applicant believes claims 76, 78-82 and 84-89 are in condition for allowance.

Claims 1-73 and 79-82 are provisionally rejected based upon the doctrine of double patenting based on claims 1-17 of Application No. 08/946,208. Since Application No. 08/946,208 has been abandoned, withdrawal of this rejection is respectfully requested. Moreover, Examiner found that claims 2-17, 22, 26-38, 44-46, 49-57 and 65-68 also are allowable over the prior art, and were only rejected based on double patenting issues. Since the double patenting rejection is now moot, Applicant believes claims 2-17, 22, 26-29, 31-38, 44-46, 49-57 and 65-68, as amended to include limitations of base claims and any intervening claims and overcome §112 rejections, are in condition for allowance.

Turning now to the Examiner's rejections based on 35 U.S.C. § 102(b), Claims 18-21, 23-25 and 39 stands rejected as being anticipated by Jay et al. (5,593,211). The '211 patent discloses a back system including a rigid shell back 36 and four separate post engaging assemblies 50 (i.e., an upper pair and a lower pair) coupled to the shell back 36 to attach the shell back 36 to the wheelchair frame posts 52. The post engaging assemblies include lower post

brackets 56 are permanently mounted to the posts by screws 57 that are screwed into holes drilled in the posts. Similarly, the upper brackets include twist retainers 70 that are permanently attached to the posts by drilling through the posts and securing the twist retainer to the post by bolt 71. Each twist retainer engages a U bracket 64 affixed to the back shell 36.

The four-point mounting of the back system in the '211 patent differs significantly from the two-point attachment assembly set forth in amended claim 18. The two-point assembly allows the back support and support chassis to be easily removed from the posts. Conventional four-point attachment schemes are more difficult to operate. Nothing in the '211 patent teaches or suggests employing a two-point attachment assembly. To the contrary, the '211 patent actually teaches away from the present invention by stating that a four point mounting means is necessary to attach the back system to the posts. Moreover, the mounting means 50 of the '211 patent includes post brackets 56 and twist retainers 70 that are permanently affixed to the wheelchair posts. In contrast, the attachment assembly of the present invention is connectable to the posts and is not permanently affixed thereto. Thus, the '211 patent fails to teach or suggest the improved attachment assembly of the present invention that can be easily positioned along the posts at infinite locations along the posts as the person's condition or dimensions (height or width) change, or if the backrest no longer properly supports the user. Furthermore, the '211 patent does not teach the support chassis as set forth in claim 18 that supports a back support at a desired incline with respect to the posts. Accordingly, amended claim 18 is believed to be allowable, and withdrawal of this rejection is respectfully requested.

Claims 19-21, 23-25 and 39 depend from and further define claim 18. Accordingly, these dependent claims are believed to be allowable for the reasons set forth above with respect to claim 18. Claim 19, as amended, further requires that the attachment assembly is adjustably

connectable to the posts at a desired location based upon the height of the individual. The claimed limitation contradicts the teachings of the '211 patent that requires the mounting means 50 to include components 56 and 70 permanently attached to the posts so as to fix the height of the back shell 36 at one location. Thus, claim 19 is believed to be allowable over the '211 patent for this reason as well.

Claim 20 depends from claim 18 and further requires that the support chassis is movable forwardly and rearwardly with respect to the posts to allow for positioning of the back support at a desired seat depth. The '211 patent does not teach or disclose a separate support chassis that allows for adjustment of seat depth and back support incline. Instead, the back system of the '211 patent relies on the mounting means 50 and slots 76 and grooves 78 formed in the flanges 38 of the back shell 36 to allow for positioning of the seat depth and angle. Comparing Figures 2 and 3 in the '211 patent and the arrangement of slots 76, grooves 78 and connection bar 79 for the back system, it appears that the seat depth adjustment and angle adjustment of the back shell 36 are interdependent. That is, as the lower end of the back shell is moved outwardly to increase the seat depth, the angle of the back shell with respect to the posts decreases or becomes substantially horizontal (see col. 9, lines 42-47). Similarly, as the seat depth decreases, the angle of the back shell with respect to the posts increases. This is in sharp contrast to the present invention as set forth in amended claim 20 wherein the support chassis allows for the seat depth and incline of the back support to be independently adjustable. Thus, claim 20 is believed to be allowable for this reason as well.

Claim 21 depends from and further defines claim 20, and requires that the support chassis includes a pair of side plates having horizontal slots that permit forward and rearward movement of the back support. Such a support chassis and slots are not taught or suggested by the '211

patent. Accordingly, claim 21 is believed to be allowable for these reasons as well as those set forth for claims 18 and 20.

Claim 23 depends from claim 18 and further includes a pair of support tubes attached to and extending vertically from the support chassis in a substantially parallel, spaced apart manner. No such support tubes or support chassis are taught or suggested by the '211 patent. Therefore, claim 23 is believed to be allowable for this reason as well.

Claim 24 depends from and further defines claim 23. Claim 24 requires that the back support includes a plurality of pads mounted to the support tubes at desired locations based upon support needs and proportions of the individual. The '211 patent does not teach or disclose such an arrangement. Thus, claim 24 also is allowable for this reason.

Claim 25 depends from and further defines claim 24, and requires that each of the plurality of pads is adjustable inwardly, outwardly, laterally and at forward and rearward inclines with respect to the support tubes. No such arrangement of pads that are independently adjustable is taught or suggested by the '211 patent. Moreover, the '211 patent appears to teach that forward and rearward movement of the back shell necessitates movement of the angle of the shell as well. No lateral movement is taught or disclosed. Hence, claim 25 is believed to be allowable over the '211 patent for these reasons as well as those set forth above.

Claim 39 depends from claim 18, and is believed to be allowable for the reasons set forth above with respect to claim 18. Claim 39 further provides that the back support includes a substantially rigid backing plate and an insert attached to a forwardly presented face of the backing plate against which the user rests when sitting in the chair. The claimed back support, as amended, is not taught or suggested by the thin foam shim 18 and foam blocks 12, as suggested by the Examiner. Nor is the backing plate that is supported by the support chassis

taught by the '211 patent. Accordingly, claim 39 is believed to be allowable over the '211 patent.

Based on the foregoing, claims 18-21, 23-25 and 39 are believed to be allowable over the '211 patent. Withdrawal of this rejection is respectfully requested.

Claims 18-21, 23-25 and 39 also stand rejected under 35 U.S.C. § 102(b) as being anticipated by Dinsmoor III et al. (5,556,168). As discussed above with respect to the '211 patent, the '168 patent also requires a four-point attachment scheme to attach a wheelchair back system to wheelchair posts. More specifically, the four point attachment assembly associated with the wheelchair back assembly of the '168 patent includes a pair of upper hook units 20 and a pair of lower hook units 40.

The upper hook units 20 are screwed onto the rigid back shell through prepunched upper mounting holes 18 and slots 18a. The hook member 22 of the upper hook units 20 can be moved forward or backward in relation to the shell by drive screw 30 to allow for angulation adjustment of the back rest without changing the seat depth. The upper hook members 22 bear against and are supported by the outside of the wheelchair posts when the user rests against the back shell.

The lower hooks of the '168 patent are screwed to the shell through prepunched lower mounting holes 16 and slots 42a. A pair of mounting units are attached to the vertical wheelchair posts to engage the lower hooks of the rigid shell. To attach the back to the wheelchair, the lower hooks are slid down the posts into the mounting units. Each mounting unit includes a spring biased pawl arm and a retaining arm between which the lower hook is secured. To remove the back rest from the wheelchair, a user pulls the top of the shell forward so that the mounting units release the lower hooks and the shell can be lifted up and out of the mounting units.

The four point mounting assembly taught by the '168 patent clearly differs from the two point attachment assembly required in claim 18. The '168 patent actually teaches away from the present invention by teaching that four points, namely, two upper and two lower hooks, are necessary to provide additional rigidity to the wheelchair frame and facilitate installation of the back system to the wheelchair. Thus, claim 18 and claims 19-21, 23-25 and 39 which depend from and further define claim 18 are believed to be allowable over the '168 patent.

It also is important to note that the back assembly of the '168 patent also does not provide for adjusting the seat depth. To the contrary, the '168 patent stresses the importance of preventing loss of seat depth when adjusting the tilt of the back rest (see, e.g., col. 2, lines 36-41; col. 3, lines 9-17; and col. 4, lines 32-35). Such teachings teach away from the claimed invention, and further support Applicant's position that claim 18 and the associated dependent claims are allowable over the '168 patent.

Furthermore, the '168 patent does not teach or disclose a support chassis of the present invention that is releasably secured to the posts by the two point attachment assembly. With respect to claim 20, the '168 patent again teaches away from the claimed invention by teaching that it is not desirable to adjust seat depth when adjusting the tilt of the back rest. The '168 patent also does not teach providing allowing the seat depth and incline of the back support to be independently adjusted. The '169 patent also does not teach or suggest providing a support chassis including a pair of side plates disposed on opposite sides of the back support with each side plate having a horizontally extending slot formed therein to permit forward and rearward movement of the back support to adjust the seat depth.

Claim 23 depends from claim 18 and further includes a pair of support tubes attached to and extending vertically from the support chassis in a substantially parallel, spaced apart manner.

No such support tubes or support chassis are taught or suggested by the '168 patent. Therefore, claim 23 is believed to be allowable for this reason as well.

Claim 24 depends from and further defines claim 23. Claim 24 requires that the back support includes a plurality of pads mounted to the support tubes at desired locations based upon support needs and proportions of the individual. The '168 patent does not teach or disclose such an arrangement. Thus, claim 24 also is allowable for this reason.

Claim 25 depends from and further defines claim 24, and requires that each of the plurality of pads is adjustable inwardly, outwardly, laterally and at forward and rearward inclines with respect to the support tubes. No such arrangement of pads that are independently adjustable is taught or suggested by the '168 patent. To the contrary, the '168 patent teaches that inward and outward movement of the back to adjust seat depth is not desired. Therefore, claim 25 is believed to be allowable over the '168 patent for these reasons as well as those set forth above.

Claim 39 depends from claim 18, and is believed to be allowable for the reasons set forth above with respect to claim 18. Claim 39 further provides that the back support includes a substantially rigid backing plate and an insert with the backing plate being supported by the support chassis at the desired incline. Such a back support and support chassis are not taught by the '168 patent. Accordingly, claim 39 is believed to be allowable over the '168 patent.

Based on the foregoing, claims 18-21, 23-25 and 39 are believed to be allowable over the '168 patent. Withdrawal of this rejection is respectfully requested.

Claims 40 and 41 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the '211 patent to Jay et al. As discussed above with respect to claim 18 and the associated dependent claims, the '211 patent actually teaches away from the present invention by requiring four separate post engaging assemblies 50 including an upper pair and a lower pair to attach the

shell back 36 to the wheelchair frame posts 52. The lower post brackets are permanently screwed into holes drilled in the posts, thereby potentially compromising the structural integrity of the wheelchair frame. Moreover, tilt adjustment or angulation of the back causes the back system to be displaced forward, thereby reducing the seat depth.

In view of the foregoing, the '211 patent clearly teaches away from the present invention as set forth in claims 40 and 41. With respect to claim 40, the '211 patent does not teach or disclose providing a support frame releasably secured to the posts at one location along each post. Instead, the '211 patent requires the shell to be attached to the posts at two locations along each post to provide four points of attachment. Thus, claim 40 is believed to be allowable over the '211 patent.

The '211 patent further does not teach or disclose providing the claimed support frame that is horizontally movable forwardly and rearwardly with respect to the chair posts to adjust the seat depth. To the contrary, the '211 patent teaches that seat depth adjustment is dependent upon tilt adjustment, and that seat depth can only be decreased when the back shell is reclined. No rearward movement is provided in the '211 patent since this would adversely affect the incline of the back, causing the user to be pushed into a "slumped-over" position by the back. Accordingly, claim 40 is believed to be allowable for these reasons as well.

Claim 41 depends from and further defines claim 40, and is believed to be allowable for the reasons set forth above with respect to claim 40. Claim 41 further provides that support frame allows for rotation of the back support forwardly and rearwardly with respect to the posts to position the back support at a desired incline with respect to the posts. The '211 patent does not teach or disclose a support frame that is rotatable forwardly and rearwardly. Moreover, the '211 patent does not teach or disclose providing a support frame that allows for independent

adjustment of seat depth and back support incline. Therefore, claim 41 is believed to be allowable for these reasons as well.

Claims 40 and 41 further stand rejected as being anticipated by the '168 patent issued to Dinsmoor, III et al. Claims 40 and 41 are believed to be allowable over the '168 patent for the reasons set forth above with respect to claims 18 and its dependent claims. As discussed above, the '168 teaches a wheelchair back system that requires four points of attachment to the wheelchair posts, namely, a pair of upper hook units and a pair of lower hook units. Thus, the back is secured to each post at two locations along that post. This is in contrast to the claimed invention as set forth in claim 40 that requires a support frame that is releasably secured to each post at one location along that post. Moreover, the '168 patent does not teach or suggest a support frame that allows for adjustment of seat depth. To the contrary, the '168 patent teaches away from the claimed invention by teaching that it is not desirable to provide a backrest system that allows for adjustment of seat depth. Accordingly, claim 40 is believed to be allowable over the '168 patent.

Claim 41 depends from and further defines claim 40, and is believed to be allowable for the reasons set forth above with respect to claim 40. Claim 41 further requires that the support frame allows for rotation of the back support forwardly and rearwardly with respect to the posts to position the back support at a desired incline with respect to the post, and that the support frame allows for independent adjustment of the seat depth and back support incline. Clearly, the '168 patent teaches away from the claimed limitations in stating that seat depth should not be adjustable, and in failing to teach or suggest a support frame that allows for independent adjustment of seat depth and back support incline. Accordingly, claim 41 is believed to be allowable over the '168 patent.

Claim 42 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,646,000 issued to Nishino. The '000 patent discloses a side support device for a vehicle seat. The vehicle seat includes a pad 44 and a back frame 11 having two side portions 11a, 11b, and two pairs of brackets 12,13 permanently fixed to side portions 11a, 11b, respectively, in vertically spaced relation. As is best seen in Figure 3, a shaft of rotation 14, 15 is journaled between each pair of brackets 12, 13. A U-shaped support frame 16, 17 is fixed to each shaft of rotation 14, 15, respectively. Link pieces 18, 19 are fixed to the lower ends of the two rotational shafts 14, 15 and are oriented in opposite directions to each other. The link pieces 18,19 are connected together by a connecting rod 20. An operation mechanism 21 causes the rotational shaft 14 to rotate so that the support frame 16 rises up or falls down. The other support frame 17 is moved symmetrically with support frame 16 since the two support frames are connected by connecting rod 20.

In rejecting claim 42, the Examiner relies upon side portions 11a, 11b of the back frame, pad 44, brackets 12, 13, shafts of rotation 14, 15, and support frames 16, 17 as allegedly teaching the claimed invention. However, Applicants find no support for such teachings in the '000 patent. The brackets 12, 13, shafts of rotation 14, 15 and support frames 16, 17 in no way teach or suggest the claimed elbow joints that has one end connected to the support tube at one location and an opposite end connected to a support pad. To the contrary, the pair of brackets 12, 13 are permanently attached to the side portions at two separate locations. The '000 patent does not teach or suggest connecting pad 44 to the U-shaped support frames 16, 17. Moreover, the support frames 16,17 are permanently connected together by connecting rod 20 so that movement of one forces movement of the other. This arrangement in no way teaches or discloses the elbow joint, as required in claim 42. In fact, it actually teaches away from the

present invention by requiring two linked support frames 16, 17 and associated structures to adjust side portions a1, a2 of the seat. The '000 patent also does not teach providing support tubes that are connectable to the rear of the chair, as required in claim 42.

Moreover, this disclosure does not teach or suggest connecting a pad to an elbow joint to allow for inward, outward and lateral movement of the pad. The pad 44 of the '000 patent is maintained at a fixed position and location in the vehicle, with only the two raised side portions a1, a2 being moved inwardly or outwardly. The pad is not connected to the brackets 12, 13, the shafts 14, 15 or the support frames 16, 17. Furthermore, this structure is not adjustable without operation of the operation mechanism 21. Such teachings do not teach or suggest the present invention. Nor does the '000 patent suggest providing an elbow joint that is adjustably secured to a support tube so the pad can be positioned at a desired location.

Based on the foregoing, claim 42, as amended, is believed to be allowable over the '000 patent. Withdrawal of this ground of rejection is respectfully requested.

Claim 43 is rejected under 35 U.S.C. § 103(a) as being obvious over the '000 patent to Nishino in view of U.S. Patent No. 5,642,956 to Hale. Claim 43 depends from and further defines claim 42, and is believed to be allowable for the reasons set forth above with respect to claim 42. The Examiner cites to the '956 patent as teaching "the conventional concept of providing an assembly attached to an elbow joint by a ball and socket joint." The Examiner further states that "[i]t would have been obvious to one having ordinary skill in the pertinent art at the time of the instant invention to modify Nishino in view of Hale by incorporating a ball and socket joint as an attachment means between the elbow joint and the pad. Such enhances the adjustability of the assembly."

The Hale patent discloses an adjustable link for kinematic mounting systems that is used for mounting machines or instruments requiring precision adjustment, isolation and/or damping. The device provides backlash-free adjustment along only a single direction of constraint. Therefore, to obtain support for an instrument requiring six degrees of freedom, six of the adjustable links are needed. Any adjustment of any link moves the instrument to a predictable location and orientation within the single constraint direction (see col. 2, lines 35-46).

This is in sharp contrast to the present invention in which the ball and socket joint allows for rotational movement of the pad. Rotational movement, as required in amended claim 43, is not taught or suggested by the adjustable link assembly of Hale patent. To the contrary, the Hale patent actually teaches away from the present invention by providing an adjustable link that allows for movement in only one direction of constraint. In other words, each adjustable link allows for movement in only one degree of freedom. To provide for movement of the instrument in six degrees of freedom, six adjustable links are needed. If rotational movement were permitted, the purpose and function of the adjustable link of the Hale patent would be destroyed since precise adjustment of the equipment with predictable location and orientation would not be allowed. Moreover, the Hale patent teaches that a dual ball and socket assembly is necessary to allow for movement in the single direction of constraint. Such an assembly again teaches away from the claimed invention in which only one ball and socket joint is provided to connect the elbow joint to the support pad.

Furthermore, any hypothetical combination of Nishino and Hale does not teach or suggest the present invention. The Examiner suggests that the adjustable link can be combined with the vehicle seat of Nishino to enhance the adjustability of the assembly. However, such a combination yields absurd results. It is not clear where the Examiner envisioned the adjustable

link being incorporated into the bracket, shaft of rotation and support frame assemblies. In any possible combination, it appears that including the adjustable link in the vehicle seat in no way enhances the operation of the side support device. To the contrary, the adjustable link would likely restrict movement of the support frames. It also is not clear how many adjustable links would be needed since each link only allows for movement in one direction. It further is not possible to envision how the adjustable link would be controlled in such a hypothetical combination.

Such absurd result are obtained because there is no teaching, suggestion or incentive supporting the suggested combination. Hale discloses an adjustable link to be used in a kinematic mounting system. Such a device is not properly combinable and is nonanalogous with the side support device for the vehicle seat of Nishino. It appears that the Examiner has impermissibly used the Applicants' teachings to hunt through the prior art for the claimed elements and combine them as claimed. In re Vaeck, 947 F.2d 488 (Fed.Cir. 1991); In re Bond, 910 F.2d 831 (Fed. Cir. 1990); In re Laskowski, 871 F.2d 115, 117 (Fed.Cir. 1989). A person of ordinary skill in the art would not look to the teachings of Hale to solve the problems treated by Nishino. Moreover, the §103 rejection is based upon a modification of Nishino that appears to destroy the intent, purpose and function of the side support device and in no way enhances its operation. Since there is no technological motivation for engaging in the modification or change suggested by the Examiner, Applicants believe the §103 rejection is improper and fails to establish prima facie obviousness of the claimed invention. Accordingly, Applicant believes claim 43 is in condition for allowance.

Claims 47 and 48 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the '000 patent to Nishino in view of the '956 patent to Hale. The Examiner

again asserts that “[i]t would have been obvious to one having ordinary skill in the pertinent art at the time of the instant invention to modify Nishino in view of Hale by incorporating a ball and socket joint as an attachment means between the support tube and the pad. Such enhances the adjustability of the assembly.” Claims 47 and 48 are believed to be allowable over Nishino and Hale taken individually and in combination for the reasons set forth above with respect to claims 42 and 43. In summary, Hale does not teach or suggest a backrest having a pair of support tubes connectable to the rear of the chair, attaching at least one pad to at least one support tube at a desired location, attaching the pad to the support tube by a ball and socket joint, allowing for rotational movement of the pad, or allowing for adjustment of the forward and rearward incline of the pad with respect to the tubes, all of which are required in claim 47. Likewise, Hale does not teach or disclose any of the claimed limitations. Hale actually teaches away from the present invention by requiring that the adjustable link allows for movement in only one direction. Moreover, Hale and Nishino are not properly combinable. A person of ordinary skill in the art would not look to the teachings of Hale to solve the problems treated by Nishino. Since there is no technological motivation for engaging in the modification or change suggested by the Examiner, Applicants believe the §103 rejection is improper and fails to establish prima facie obviousness of the claimed invention. Accordingly, Applicant believes claim 47 and claim 48, which depends from and further defines claim 47, are in condition for allowance.

Claim 48 further is believed to be allowable because neither Hale nor Nishino nor any combination of Hale and Nishino teaches or suggests providing an elbow joint to connect the ball and socket joint to the support tube, with the elbow joint permitting inward, outward and lateral movement of the pad with respect to the support tube. Thus, claim 48 is believed to be allowable for these reasons as well.

Claims 58-61 stand rejected under § 103(a) as being unpatentable over U.S. Patent No. 134,424 to Evans in view of the '000 patent to Nishino. Evans discloses a headrest for a dentist chair, including a rotating shaft A, a rigid arm B attached to shaft A and upon which slide C is disposed, sleeve D which rotates on pivot F, and ball E that is attached to the sleeve D for a ball and socket joint. Clamps a and b are provided to lock the slide C in place along arm B, and to prevent rotation of sleeve D with respect to pivot F, respectively. However, in this configuration, arm B rotates freely on shaft A and the ball rotates freely in the socket during use. Thus, movement of the headrest is permitted at all times during use of the chair.

The headrest of the Evans patent clearly differs from the present invention as set forth in claims 58-61, as amended. Most notably, the Evans patent does not teach or suggest providing a mounting assembly having an unlocked position allowing for adjustment of the headrest pad to obtain a desired position and having a locked position that prevents movement of the headrest pad when the desired position is obtained. To the contrary, the Evans patent actually teaches away from the claimed mounting assembly by teaching that movement of the pad should be allowed at all times. Moreover, the Evans patent does not teach or suggest providing two vertically extending support tubes that are connectable to the rear of a chair. Nor does Evans teach the provision of a back support removably secured to the support tubes. Furthermore, Evans does not teach or suggest the provision of a mounting assembly that is removably mounted to the support tubes. Thus, Claim 58 is believed to be allowable over the teachings of Evans.

Furthermore, Evans does not teach or suggest the limitations as set forth in dependent claims 59-61. As set forth above, Evans does not teach providing the locked and unlocked positions as required in these claims.

The Examiner states that “[i]t would have been obvious to one of ordinary skill in the pertinent art at the time of the instant invention to modify Evans in view of Nishino by incorporating the pair of support tubes attached to a rear of the chair and extending vertically therefrom. Such enhances structural stability of the assembly.” While attaching side portions 11a, 11b of the seat frame 11 from Nishino may improve the structural stability of the dentist chair in Evans, such a combination in no way teaches the claimed invention. Such a combination does not teach a pair of support tubes that are connectable to the rear of a chair, or a back support that is removably secured to the support tubes, or a headrest assembly that is removably mounted to the support tubes, all of which are required in claim 58. The hypothetical combination also does not teach providing a mounting assembly having unlocked and locked positions, as required in claim 58. Accordingly, claim 58 is believed to be allowable over any hypothetical combination of Evans and Nishino.

Furthermore, Evans and Nishino taken alone or in combination do not teach or suggest the limitations as set forth in dependent claims 59-61. As set forth above, Evans does not teach providing the locked and unlocked positions as required in these claims. Moreover, these references do not teach or disclose providing a pair of elbow joints with one elbow joint releasably secured to each support tube and extending between the support tube and the headrest pad, as required in claim 60. Nor does Evans or Nishino teach the provision of two ball and socket joints with one ball and socket joint connecting each elbow joint to the headrest pad. Accordingly, these claims are believed to be allowable for these reasons as well as those set forth above for claim 58.

Claims 62-64 are rejected under § 103(a) as being unpatentable over U.S. Patent No. 3,293,671 issued to Griffin in view of the ‘211 patent to Jay et al. Griffin discloses

a portable, foldable cushion for chairs, sofas, beds, etc. to be used indoors or outside on the beach, the ground or the like having a series of soft, yieldable blocks set into or supported by a sheet of flexible material. This invention is intended to be easily and readily moved and carried from place to place to provide a cushion on which a user can rest in any situation, e.g., in the car, at the park or on the bed. Such a cushion clearly does not teach or suggest the backrest system as set forth in amended claim 62. Claim 62 requires a plurality of individual support pads with each pad being removably secured to the support tubes. Such support pads are not taught or suggested by Griffin.

The Examiner relies on the '211 patent for its teaching of wheelchair posts that are associated with a wheelchair, and states that it would have been obvious to one skilled in the art to modify Griffin in view of Jay et al. by incorporating the wheelchair posts to enhance the structural integrity of the assembly. However, such a combination is not proper since the modification suggested by the Examiner would actually destroy the intent, purpose and function of the cushion in the Griffin patent. The Griffin cushion is intended to be readily movable and readily foldable into a comparatively small bundle that is ready for packing or for carriage from point to point. It also is intended to be used in a wide variety of applications such as on sofas, on beds, on the floor, outdoors and on the beach. Combining the cushion as suggested by the Examiner would destroy the intent, purpose and function of Griffin since it would no longer be portable, foldable or packable, or usable in a variety of situations and environments. There is no technological motivation for engaging in the modification or change suggested by the Examiner. Accordingly, the §103 rejection is believed to be improper and withdrawal of this rejection is requested.

Even assuming for the sake of argument that the references are combinable as suggested by the Examiner, such a hypothetical combination does not teach or suggest the claimed invention. The combination does not teach the provision of support tubes that are removably connectable to the rear of the chair, or the provision of a plurality of individual support pads with each pad being removably secured to at least one of the support tubes at desired locations as set forth in claim 62. It does not teach providing a first pad for the first tier of support, a pair of pads for a second tier of support, and a fourth pad for a third tier of support, as required in claim 62. Accordingly, claim 62 is believed to be allowable for these reasons as well.

Claims 63 and 64 depend from and further define claim 62, and are believed to be allowable for the reasons set forth above with respect to claim 62. Claim 63 further provides for a fifth pad mounted to the support tubes to provide a fourth tier of support. Such a pad assembly is not taught by any hypothetical combination of Griffin and Jay et al. Any hypothetical combination of these references also does not teach a headrest pad removably mounted to the support tubes to provide a fifth tier of support, as required in claim 64.

Accordingly, Applicants believe claims 62-64 are allowable over the cited prior art. Withdrawal of this ground of rejection is respectfully requested.

Claims 69-71 are rejected under 35 U.S.C. § 102(b) as being anticipated by the '211 patent to Jay et al. These claims are believed to be allowable over the '211 patent for the reasons set forth above with respect to independent claims 18, 40 and 62 and associated dependent claims. In summary, the '211 patent does not teach or disclose a back support including a plurality of pads with each pad being positioned to support a particular region of the individual's back, or a support chassis disposed between the posts and mounted to the back support for supporting each pad at a desired location. Furthermore, the '211 patent does not teach or

disclose a two-point attachment assembly connectable to the posts at a desired location for releasably securing the support chassis to the posts. To the contrary, the '211 patent actually teaches away from the claimed invention by disclosing only a single unitary back support and requiring four points of attachment to secure the back support to the wheelchair. Accordingly, claim 69 and claims 70 and 71 which depend from and further define claim 69 are believed to be allowable.

Amended claim 70 further provides for a plurality of covers with one cover being removably positioned around the insert and at least a portion of the backing plate for each pad. Such covers are not taught or suggested by the '211 patent. Instead, the '211 patent requires only one cover for the entire back support. Drawbacks associated with providing only one cover for all pads include that if only one section of the cover were soiled, the entire cover would have to be removed to be cleaned. The present invention provides significant improvements over such an arrangement by providing that each pad has its own cover so that if one cover needs to be removed for cleaning, the other covers remain in place to protect the associated pads.

Claim 69 also stands rejected under 35 U.S.C. § 102(b) as being anticipated by the '168 patent to Dinsmoor, III et al. Claim 69 is believed to be allowable over Dinsmoor, III et al. for the reasons set forth above with respect to independent claims 18 and 40 and the associated dependent claims. In summary, Dinsmoor, III et al. does not teach or disclose a two point attachment assembly as required in claim 69. To the contrary, the '168 patent actually teaches away from the claimed invention by requiring four points of attachment to secure the back support to the wheelchair. The '168 patent does not teach or disclose a back support including a plurality of pads with each pad being positioned to support a particular region of the individual's back, but instead teaches only a single unitary back support. The '168 patent also does not teach

a support chassis disposed between the posts and mounted to the back support for supporting each pad at a desired location. Accordingly, claim 69 is believed to be allowable over Dinsmoor III et al.

Claim 72 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the '211 patent to Jay et al. in view of U.S. Patent No. 5,007,676 to Lien. Claim 72 depends from and further defines claim 70, and is believed to be patentable over Jay et al. for the reasons set forth above with respect to claims 69 and 70. Claim 72 further is believed to be allowable over Lien because Lien does not teach or disclose the provision of a cover that wraps around a support pad in its substantial entirety and is held in position by hook and loop fasteners, as required in claim 72 and shown in Fig. 35. Moreover, Lien does not teach or disclose having the hook and loop fasteners both attached to the cover so that no separate component is needed to secure the cover to the pad. Accordingly, claim 72 is believed to be allowable for this reason as well.

Claim 73 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the '211 patent to Jay et al. in view of U.S. Patent No. 5,062,677 to Jay et al. Claim 73 depends from and further defines claim 70, and is believed to be patentable for the reasons set forth above with respect to claims 69 and 70. Furthermore, neither the '211 patent nor the '677 patent teach or disclose the provision of a plurality of back support covers positioned around each pad, as required in claim 73. Accordingly, claim 73 is believed to be allowable.

Claims 74 and 75 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 2,928,686 issued to Newkirk. Newkirk discloses a universal ball and socket having a socket member 10 attached to a fixed base, and a ball 12 disposed in the socket. A vise base 20 or other mechanical element base is attached to the ball so that the vise base 20 can be moved into a desired adjusted position upon rotation of the ball in the socket. The ball is tightly secured

in the socket by activating screw 28 to force a sliding plug 30 of the ball into close contact with the socket 14 and forcing the ball 12 into tight contact with the circular opening 24 of collar 22.

Claim 74 is amended pursuant to this Amendment to further set forth the structure of the ball by stating that the first and second sections are formed by passing a cutting plane through the ball so that the first section has a maximum circumference corresponding to that of a small circle of the ball, and the second section has a maximum circumference corresponding to that of a great circle of the ball. These limitations are supported by the description of the preferred embodiment of the present invention and the drawings as set forth in FIGS. 23A, 23B, 25A and 25B, and clearly distinguish the present invention from the ball set forth in the Newkirk patent having a hollowed out portion in which is disposed the slidable plug. The present invention presents significant improvements over that shown in Newkirk. For example, the spherical surface area of the first section provides a larger contact area with the socket for locking the ball when compared to the Newkirk sliding plug.

The claimed invention also requires that when the ball is in the unlocked position, the socket rotates with respect to the ball, and movement of the socket is prevented when the ball is in the locked position. This is in sharp contrast to the teachings of the Newkirk patent which require the socket to be maintained in a fixed location and the ball to rotate with respect to the socket. The teachings of Newkirk comport with those of conventional ball and socket joints in which the ball rotates in the socket, as opposed to the socket rotating about the ball, as required in the present invention.

Based upon the foregoing, Applicants believe that claim 74, as amended, and dependent claim 75 are allowable over Newkirk. Withdrawal of this rejection is respectfully requested.

Claim 77 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the '686 patent to Newkirk in view of U.S. Patent No. 4,565,345 issued to Templemann.

Claim 77 depends from and further defines claim 74, and is believed to be allowable for the reasons set forth above with respect to claim 74. Claim 77 further provides for the first section to be constructed from a nylon material, with the nylon material allowing for flexure of the first section in the socket when in the locked position to prevent movement of the ball in the socket when an external load is applied to the socket. Such a ball and socket joint is not taught or suggested by Templemann taken alone or in combination with Newkirk. Templemann discloses a mirror assembly having an expandable ball and socket arrangement for retaining the mirror in a desired position. The ball member has a plurality of laterally spaced partially spherical segments that have slots or relief grooves formed therebetween. When a draw bolt is drawn through the ball member, the ball segments expand against the socket to prevent rotation of the mirror housing. In this configuration, the ball member is fabricated from a material such as 30% glass filled nylon. However, this arrangement would not adequately lock the ball in the socket when subjected to external loads such as, for example, loads applied to pads on a wheelchair. The segments of the ball would likely flex too much to prevent movement of the socket when subjected to external loads. Accordingly, the nylon segmented ball of the Templemann patent does not teach or suggest the present invention, as set forth in the claims wherein neither the first section nor the second section is segmented. Moreover, any hypothetical combination of Templemann and Newkirk does not teach the present invention, as set forth in amended claim 74. Neither patent presents addresses the problem associated with preventing rotation of the socket about the ball when an external load is applied to the socket. Providing the first section as set forth in the claims and constructed from a nylon material allows for significant loads to be

applied to the socket without displacing the socket with respect to the ball. Such a solution as set forth in the claims to overcome problems associated with conventional ball and socket configurations is not taught or suggested by these references taken alone or in combination. Thus, allowance of claim 74 is respectfully requested.

Claim 83 also is rejected under 35 U.S.C. § 102(b) as being anticipated by the Newkirk patent. Claim 83, as amended, is believed to be allowable over the Newkirk patent for the reasons set forth above with respect to claim 74.

In view of the foregoing, Applicants believe that claims 18-21, 23-25, 39-43, 47, 48, 58-64, 69-75, 77 and 83, as amended, overcome the prior art references cited by the Examiner. Accordingly, Applicants respectfully request withdrawal of the §§102(b) and 103(a) rejections, and issuance of a Notice of Allowability with respect to these claims.

Newly added claims 92-96 also are believed to be allowable over the references cited by the Examiner for the reasons set forth above.

In conclusion, Applicant respectfully requests issuance of a Notice of Allowability with respect to claims 2-29 and 31-96.

Respectfully submitted,



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